

CITY OF  
**LONG BEACH**

**SEA LEVEL RISE & HOW HOMEOWNERS CAN PREPARE**

Featuring Jerry Schubel, Ph.D., from the Aquarium of the Pacific  
And local architect Jeff Jeannette, AIA CGBP, Jeannette Architects

# CAAP

**CLIMATE ACTION  
+ ADAPTATION PLAN**

January 14<sup>th</sup>, 2019

# Agenda

- ▶ Welcome (5 minutes)

- ▶ Linda F. Tatum, FAICP, Director, City of Long Beach Development Services Department

- ▶ Presentations (30 minutes)

- ▶ Update on development of the Long Beach Climate Action & Adaptation Plan (CAAP)
    - ▶ Alison Spindler, AICP, Planner, City of Long Beach Planning Bureau
  - ▶ Sea Level Rise Science Overview
    - ▶ Dr. Jerry Schubel, Ph.D., President & CEO, Aquarium of the Pacific
  - ▶ What Can Homeowners Do to Prepare?
    - ▶ Jeff Jeannette, AIA CGBP, Principal,  
Lead Architect and Designer, Jeannette Architects

- ▶ Panel Discussion (30 minutes)

- ▶ Audience Q&A (45 minutes)





# What is Climate Action/Mitigation?

*Climate Action is...*

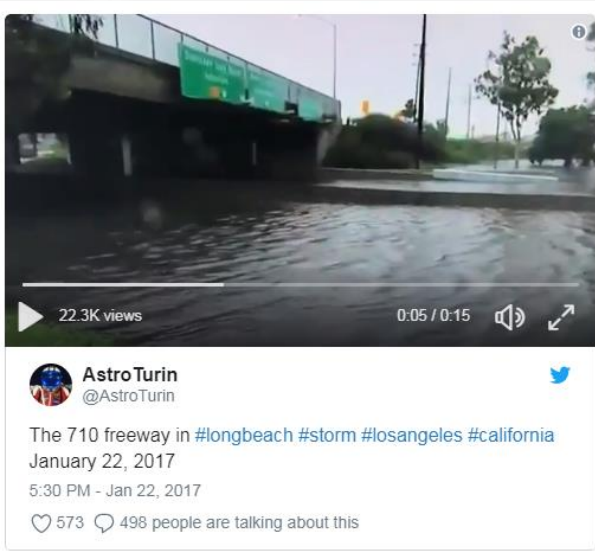


Image Credit: Press Telegram

...about reducing the impact we (people) have on the climate system by reducing future carbon emissions. *(for example, driving less)*

# What is Climate Adaptation?

*Climate Adaptation is...*



...about adjusting our behaviors, systems, infrastructure, to reduce the impact climate change has on us. *(for example, flood proof a house)*

# What is the CAAP?

## Long Beach is developing its first ever Climate Action and Adaptation Plan (CAAP), and we need your help!

- ▶ What is a CAAP? A plan to:
  - Reduce greenhouse gas (GHG) emissions
  - Prepare the community for the impacts of climate change
  - Improve the quality of life
  - Enhance economic vitality in Long Beach





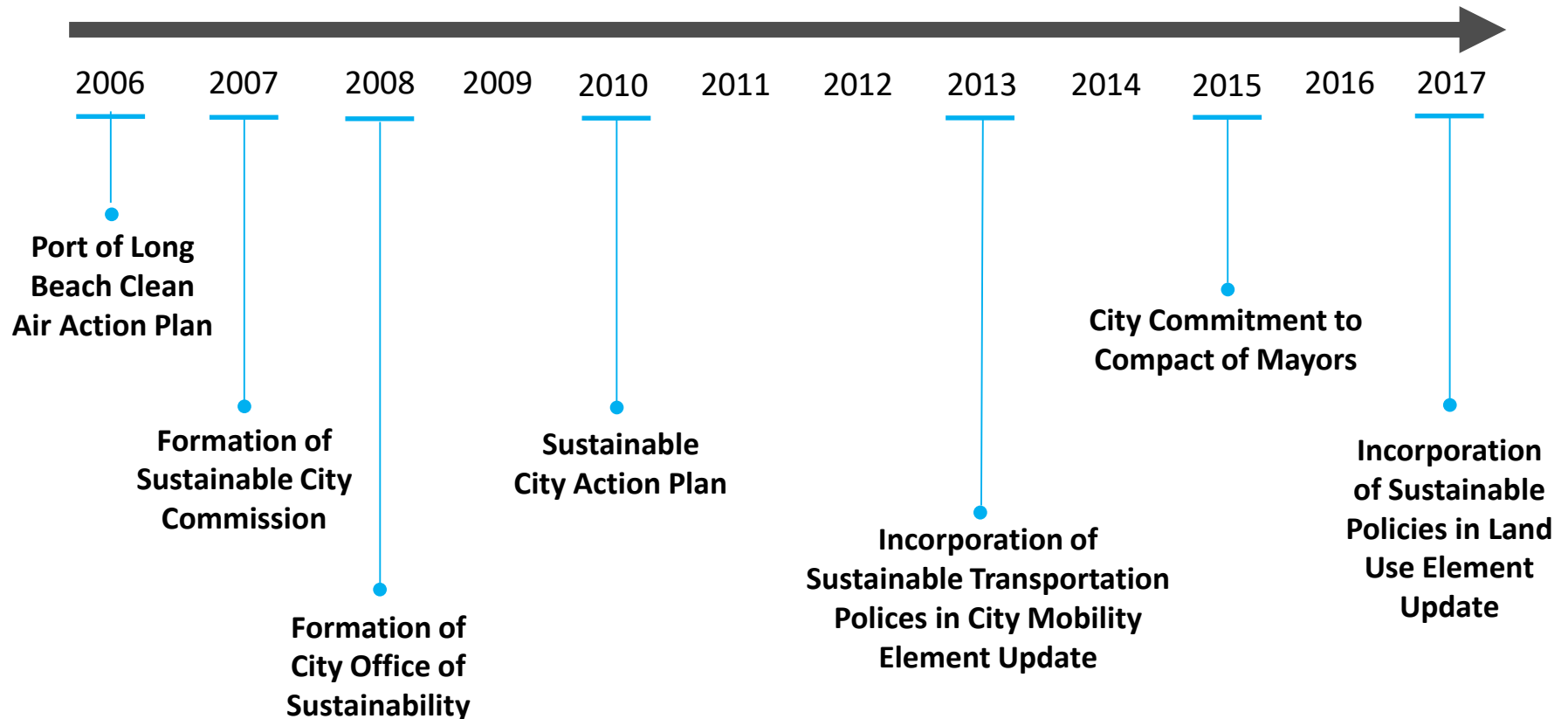
# CAAP Goals – *Small Change, Big Impact*

- ▶ Distinguish Long Beach as a leader in climate mitigation and adaptation planning
- ▶ Be an actionable plan (right balance of innovation and practicality)
- ▶ Create a more prosperous community by addressing climate change
- ▶ Consider economic, social, and environmental co-benefits holistically
- ▶ Empower young people to be leaders in creating a most sustainable community
- ▶ Invoke personal sense of responsibility among residents and businesses



# Building on Historical Achievements

## Timeline of Long Beach Sustainability and Resilience Accomplishments



# Why Develop a CAAP?

- Meet applicable local, state, and other requirements:
  - AB 32 / SB 32 (aka California Global Warming Solutions Act of 2006)
    - Requires California to reduce its GHG emissions to 1990 levels by 2020 — a reduction of approximately 15 percent below emissions expected under a “business as usual” scenario.
  - SB 375 (Sustainable Communities and Climate Protection Act of 2008)
    - Integrate transportation, land use and housing policies to achieve emissions reductions
  - AB 691
    - Must develop and submit a plan to the State Lands Commission for addressing sea level rise in the Tidelands area
  - SB 1000
    - General Plans must incorporate adaptation strategies
    - Identify and address disproportionate impacts to disadvantaged communities
  - SB 379
    - General Plan Safety Element Update must address climate adaptation and resiliency strategies applicable to that city or county.
  - CEQA
  - Global Covenant of Mayors



# CAAP Development Process

## ► Technical Work Done to Date:

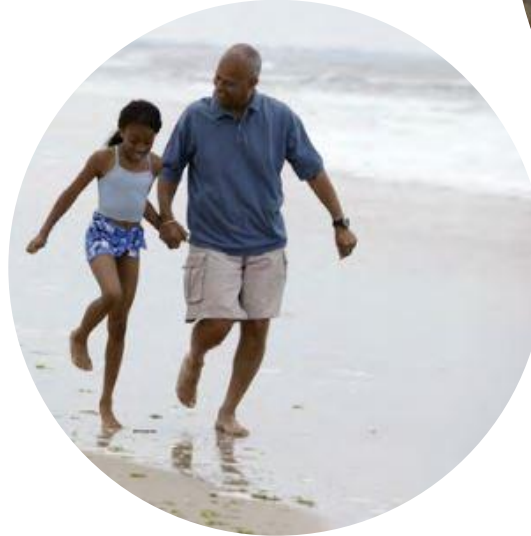
- Technical analyses required as a basis of data and facts for developing a CAAP
- Components:
  - Vulnerability assessment of critical assets (buildings, roads, bridges, parks, etc.)
  - DRAFT adaptation actions
  - GHG inventory and forecast
  - Options for GHG mitigation targets
  - DRAFT mitigation actions

## ► Preliminary outreach conducted:

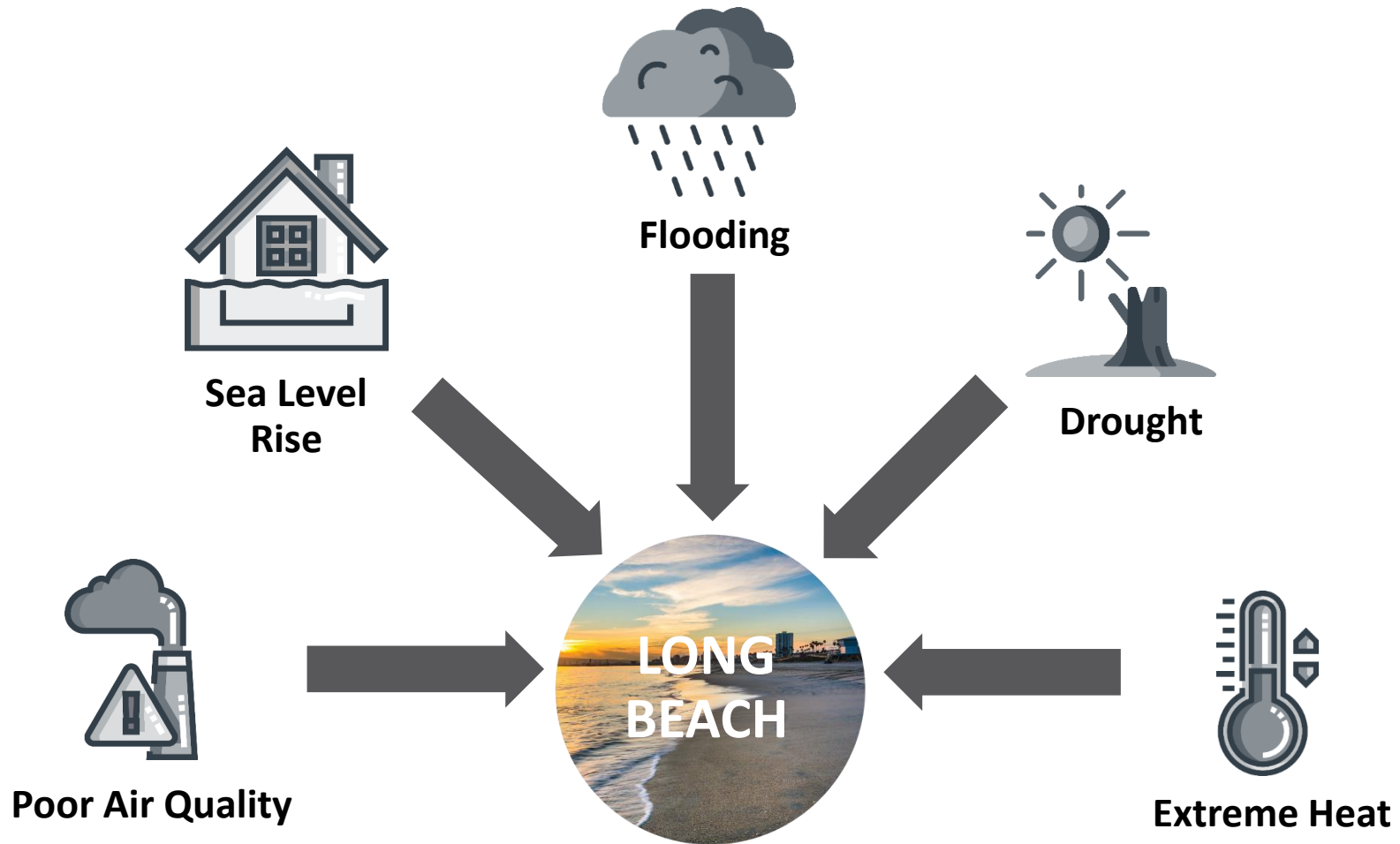
- Scientific Working Group
  - Validate the methodology, provide local data
  - 13 independent experts from: CSULB, LBCC, UCLA, Aquarium of the Pacific, AQMD, RAND
- Business Working Group
- Community Working Group
- Over 20 CAAP community events in 2018 throughout the City

# Community and Infrastructure Assets Likely to be Impacted

- Public Health
- Water Supply
- Housing & Neighborhoods
- Coastal Resources
- Parks and Open Space
- Transportation
- Energy
- Wastewater/Stormwater



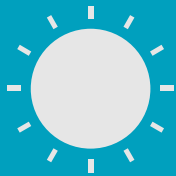
# Climate Hazards Likely to Impact Long Beach



See the Long Beach Climate Hazards report at: [www.lbds.info/climateactionlb](http://www.lbds.info/climateactionlb)



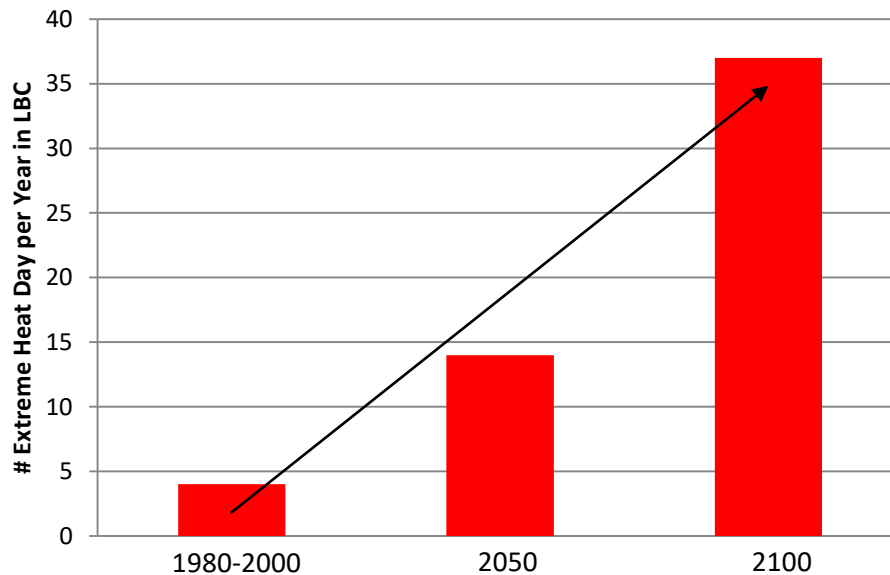
# Climate Science Review: Extreme Heat



+7 to +33 more  
extreme heat  
days per year

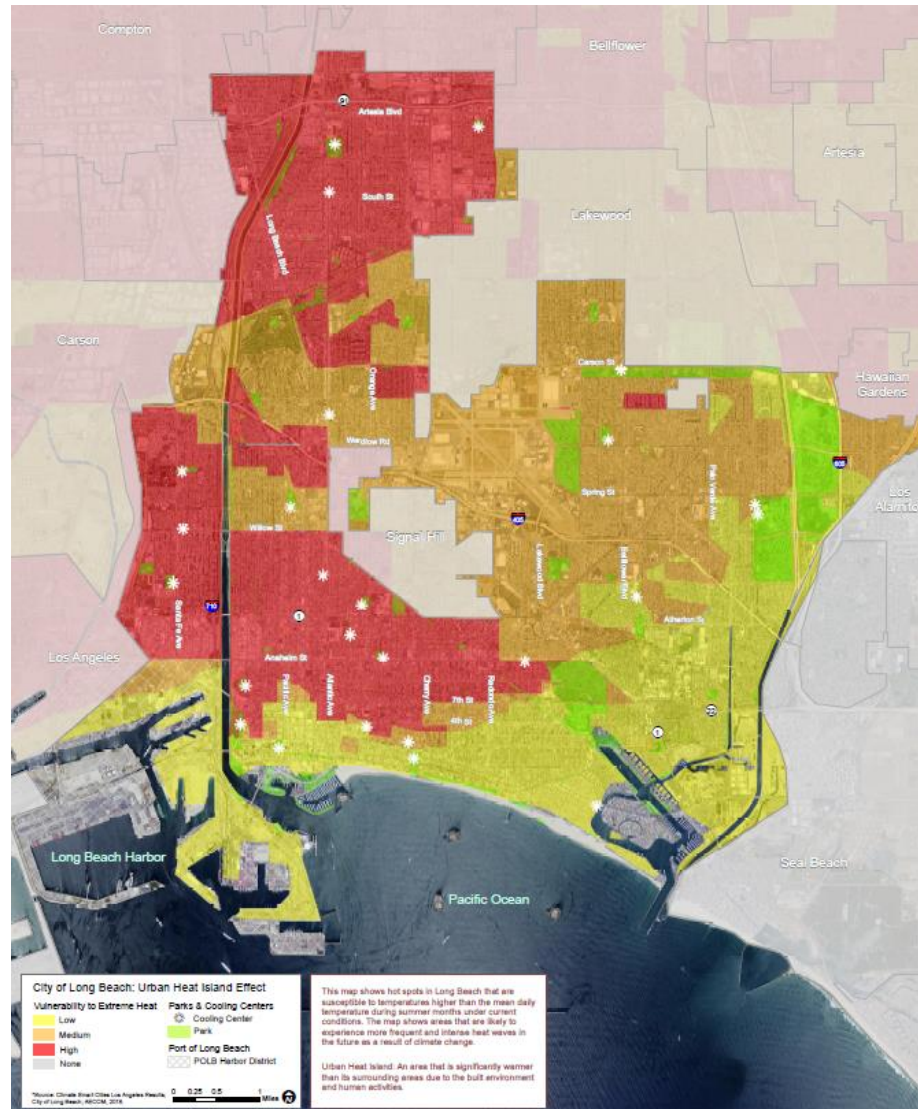
## MORE FREQUENT AND INTENSE HEAT WAVES

Low income areas and communities of color are more likely to live in areas that suffer from urban heat island effect (e.g. North, Central, West Long Beach).



- Approximately **275,000 LB residents** in the high vulnerability zone to extreme heat
- Increased risk of heat-related illnesses and death
- Particularly vulnerable populations include: children, the elderly, people with respiratory diseases, those who work outdoors
- Changes in temperature and precipitation may lead to changes in the spread of vector-borne diseases
- Missed work and school
- Damage to roads, highways, and rail from extreme heat
- Increases in tropical pathogens, parasites, and diseases due to higher temperatures
- Example: Power outages associated with extreme heat

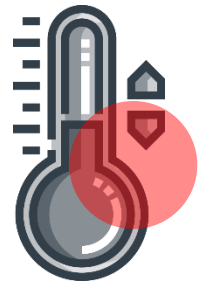
# Vulnerability Assessment: Extreme Heat



# So What Do We Do About it?

## DRAFT Extreme Heat Adaptation Actions

- ▶ Construct bus shelter amenities, e.g., shade structures
- ▶ Increase presence of cool roofs, reflective streets, parking lots and playgrounds
- ▶ Increase public water supply access
- ▶ Expand cooling centers
- ▶ Develop emergency response plan for power outages related to extreme heat
- ▶ Continue implementation of the Urban Forest Management Plan
- ▶ Increase presence of reflective surfaces
- ▶ Increase presence of shade canopies
- ▶ Expand the Agriculture Incentive Zone Program





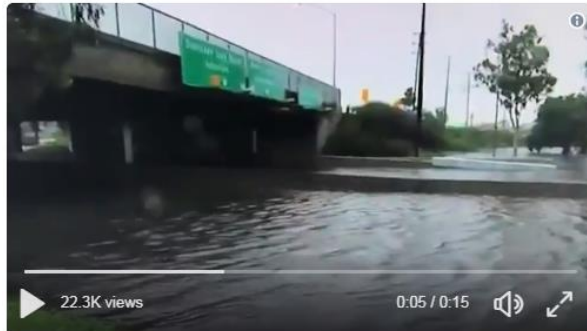
# Riverine Flooding Impacts on Long Beach



## SEA LEVEL RISE AND FLOODING ARE EXPECTED TO INCREASE

Certain coastal areas are at risk of sea level rise, and low-lying areas are at risk of increased exposure to precipitation based flooding.

- Flooding events may contribute to injury, death, displacement, mental health burden
- According to an analysis by the Aquarium of the Pacific, with 24 inches of SLR and a 100-year storm surge, over 22,000 residents are at risk of exposure to flooding
- Sewage overflow could result in water and food-borne illness
- Damage to wastewater infrastructure and sewage backup and overflow in flooding event
- Disrupted food and water supply could cause hunger and malnutrition, particularly in low-income, children, and elderly population
- Increased risk of displacement and loss of home due to a flood event related to precipitation based flooding
- Disruptions to the transportation system could impact neighborhood connectivity including access to jobs, goods, services and healthcare



AstroTurin  
@AstroTurin

The 710 freeway in #longbeach #storm #losangeles #california  
January 22, 2017

5:30 PM - Jan 22, 2017

♥ 573 💬 498 people are talking about this

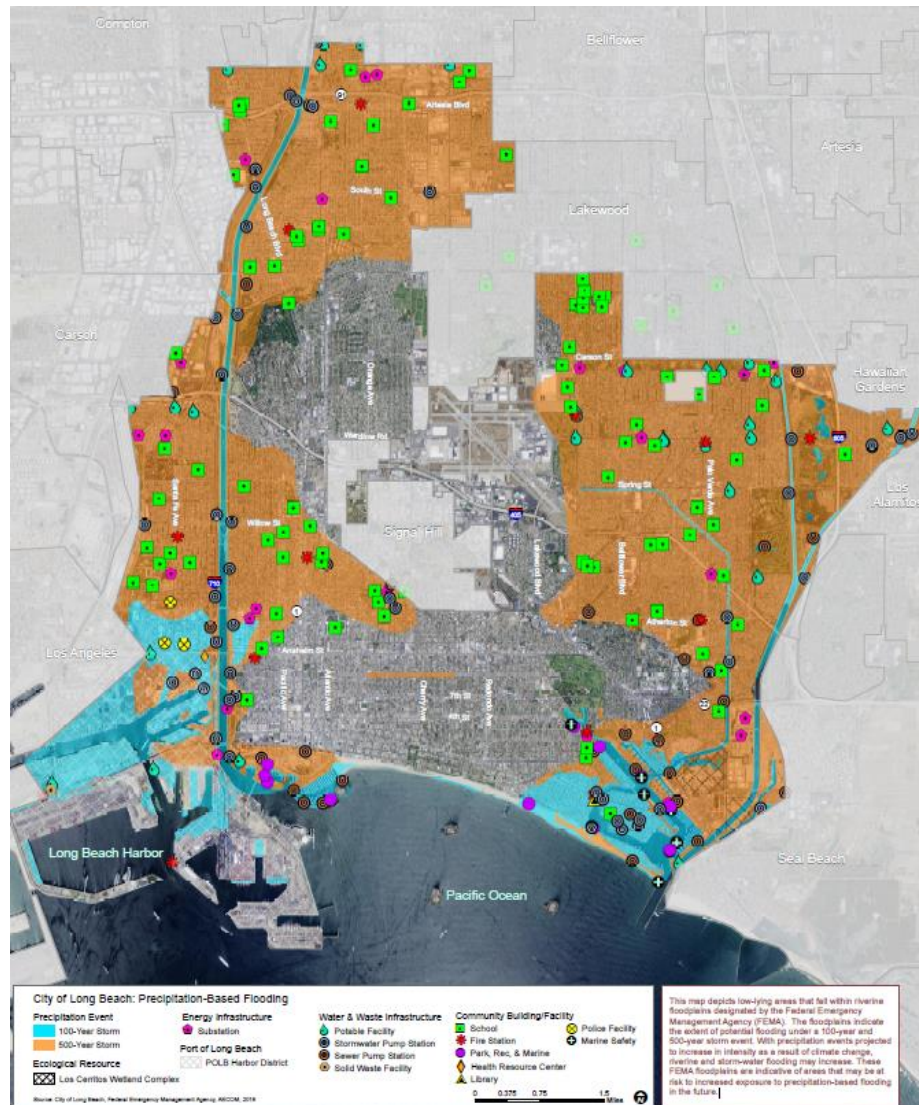


LBPD North Division  
@LBPDNorth

One of many rescues today found by a LB Sergeant & rescued by LB Fire @lbfd personnel. Passenger was in a wheelchair.  
10:14 PM - Jan 22, 2017

♥ 42 💬 22 people are talking about this

# Vulnerability Assessment: Riverine Flooding



# Sea Level Rise Impacts on Long Beach



## SEA LEVEL RISE AND FLOODING ARE EXPECTED TO INCREASE

Certain coastal areas are at risk of sea level rise, and low-lying areas are at risk of increased exposure to precipitation based flooding.

Table 1. Sea Level Rise Projections at Los Angeles, CA from OPC (2018)

Year (Emissions Scenario)	Inches Above 1991-2009 Mean Sea Level (in)			
	Median (50% probability of exceedance)	Likely Range (67% percent likely range)	1-In-20 Chance (5% probability of exceedance)	1-In-200 Chance (0.5% probability of exceedance)
2030	4	2 to 6	7	8
2050	8	6 to 12	14	22
2100 (low emissions)	16	8 to 25	36	65
2100 (very high emissions)	26	16 to 38	49	80

Source: OPC (2018)

Table 2: Sea Level Rise Projections for Los Angeles, CA from NRC (2012)

Year	Southern California	
	Projection	Range
2030	5.8 ± 2.0 in	4.6 – 11.8 in
2050	11.2 ± 3.5 in	5.0 – 23.9 in
2100	36.7 ± 9.8 in	17.4 – 65.6 in

Source: NRC (2012)

- Flooding events may contribute to injury, death, displacement
- Beach inundation and erosion will increase
- Damage to coastal roads, railways, and bridges
- Inundation and loss of access to marinas
- Damage or loss of critical infrastructure, including potable water, waste water, transportation infrastructure
- Damage to transportation infrastructure could inhibit or delay emergency response
- Sewage overflow could result in water and food-borne illness
- Loss of wetland habitat due to SLR. The Los Cerritos wetlands are particularly vulnerable given surrounding urban development

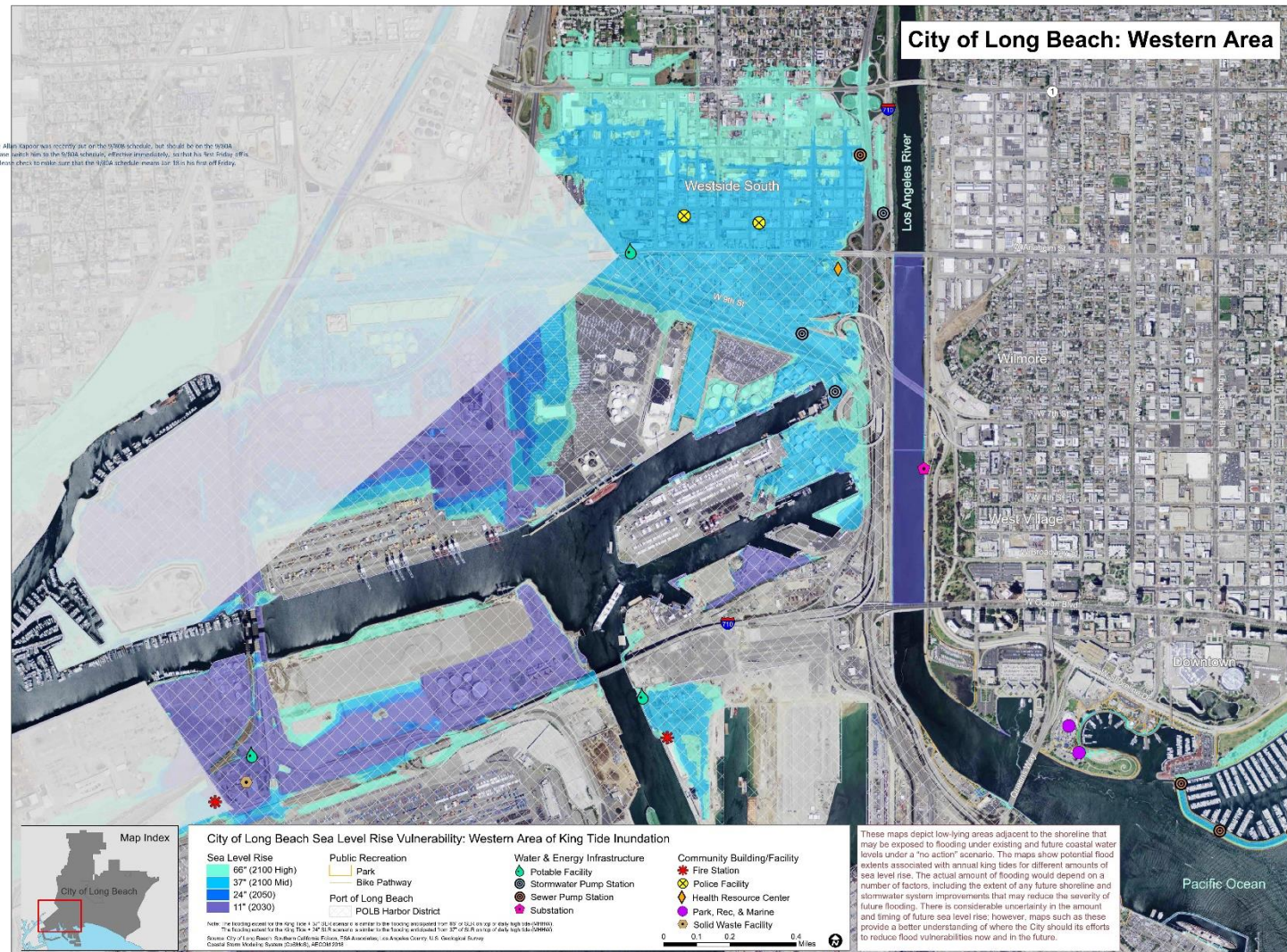


# Sea Level Rise in Downtown Long Beach



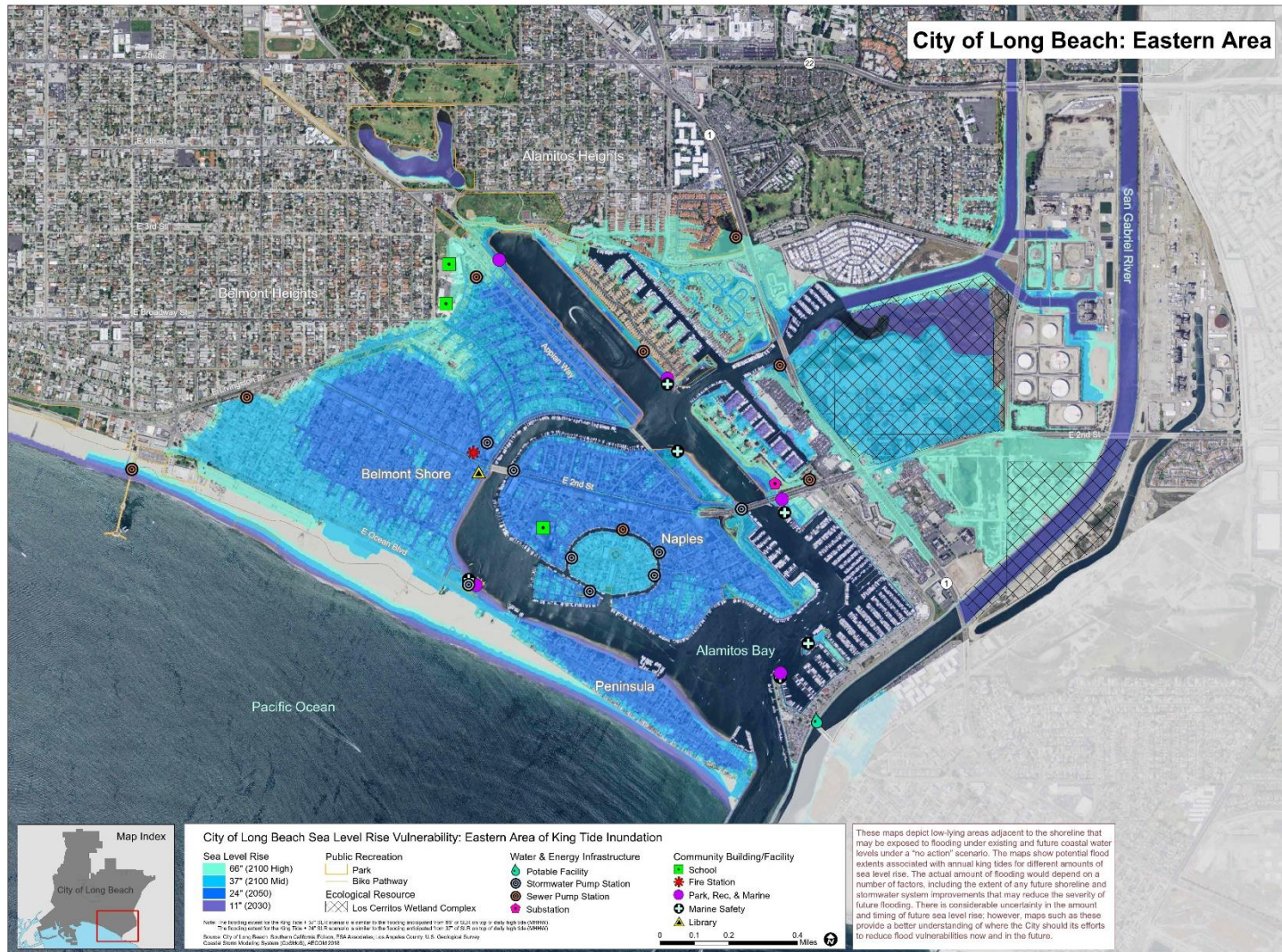


# Sea Level Rise in West Long Beach





# Sea Level Rise in East Long Beach





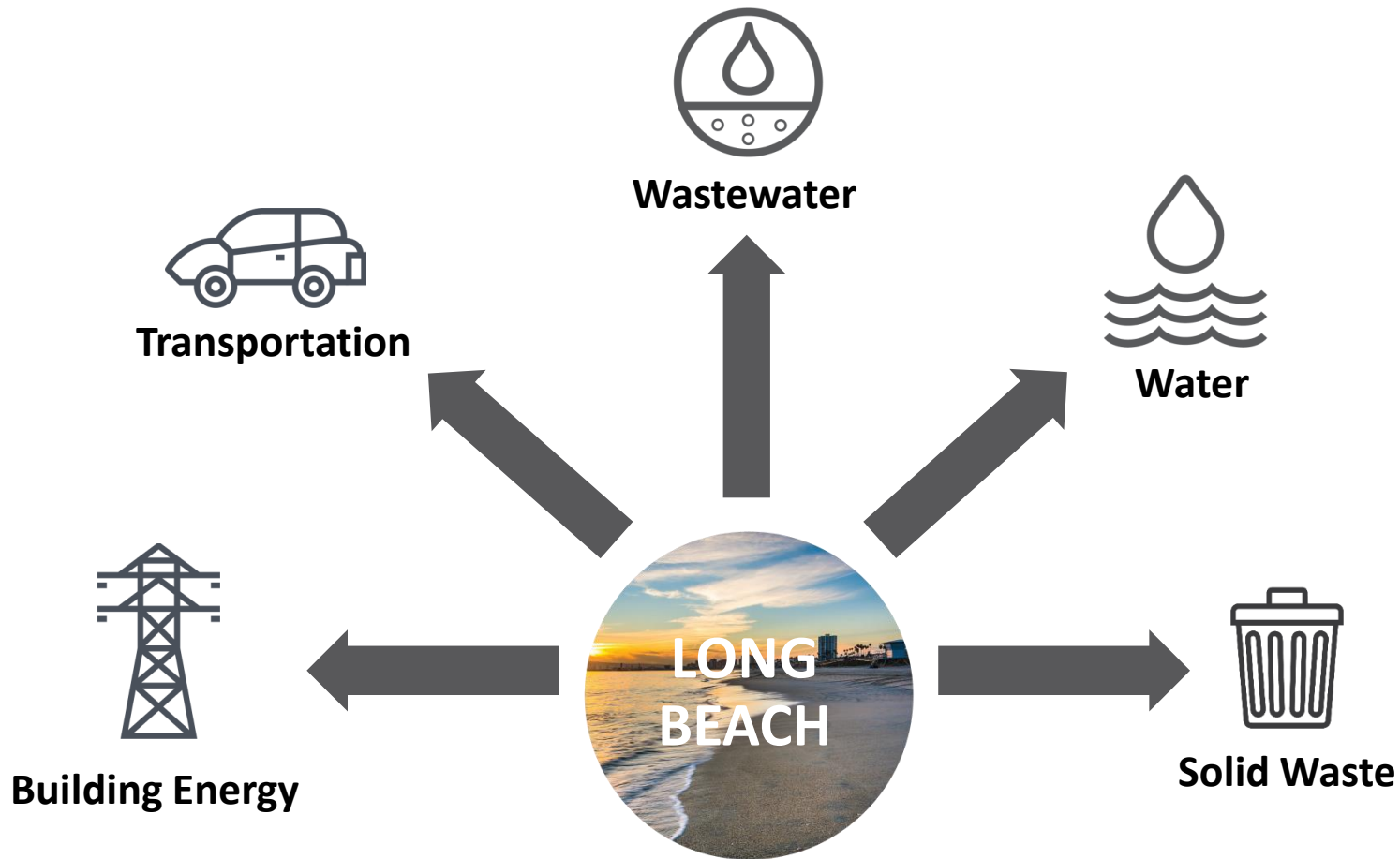
# So What Do We Do About it?

## DRAFT Sea Level Rise Adaptation Strategies

- ▶ Update floodplain management ordinance
- ▶ Relocate/elevate critical infrastructure
- ▶ Elevate homes/businesses
- ▶ Update City emergency response plan
- ▶ Nourish beaches
- ▶ Monitor breakwater
- ▶ Active and/or passive dune restoration
- ▶ Groundwater monitoring program

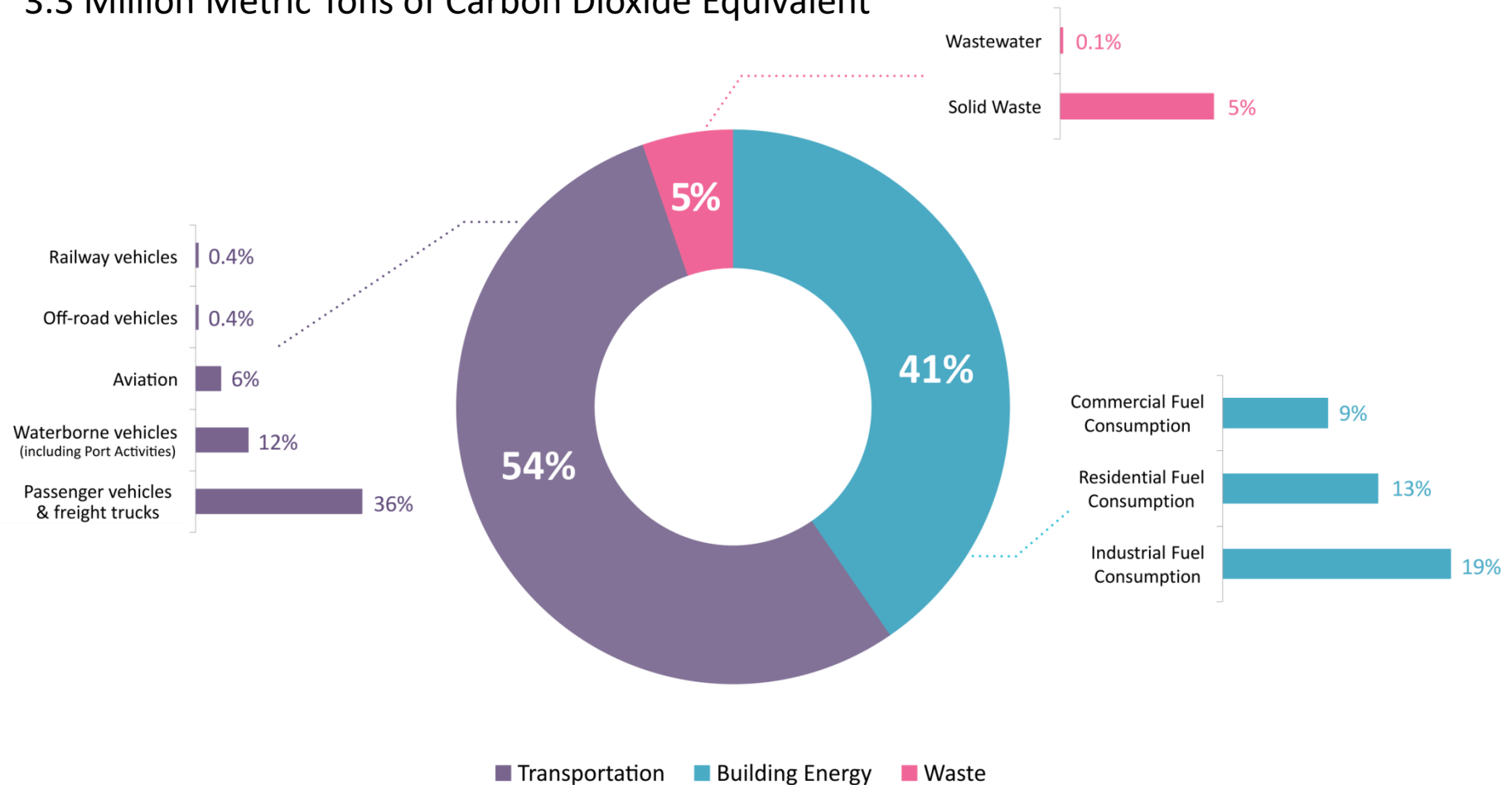


# Emissions Generating Sectors in Long Beach



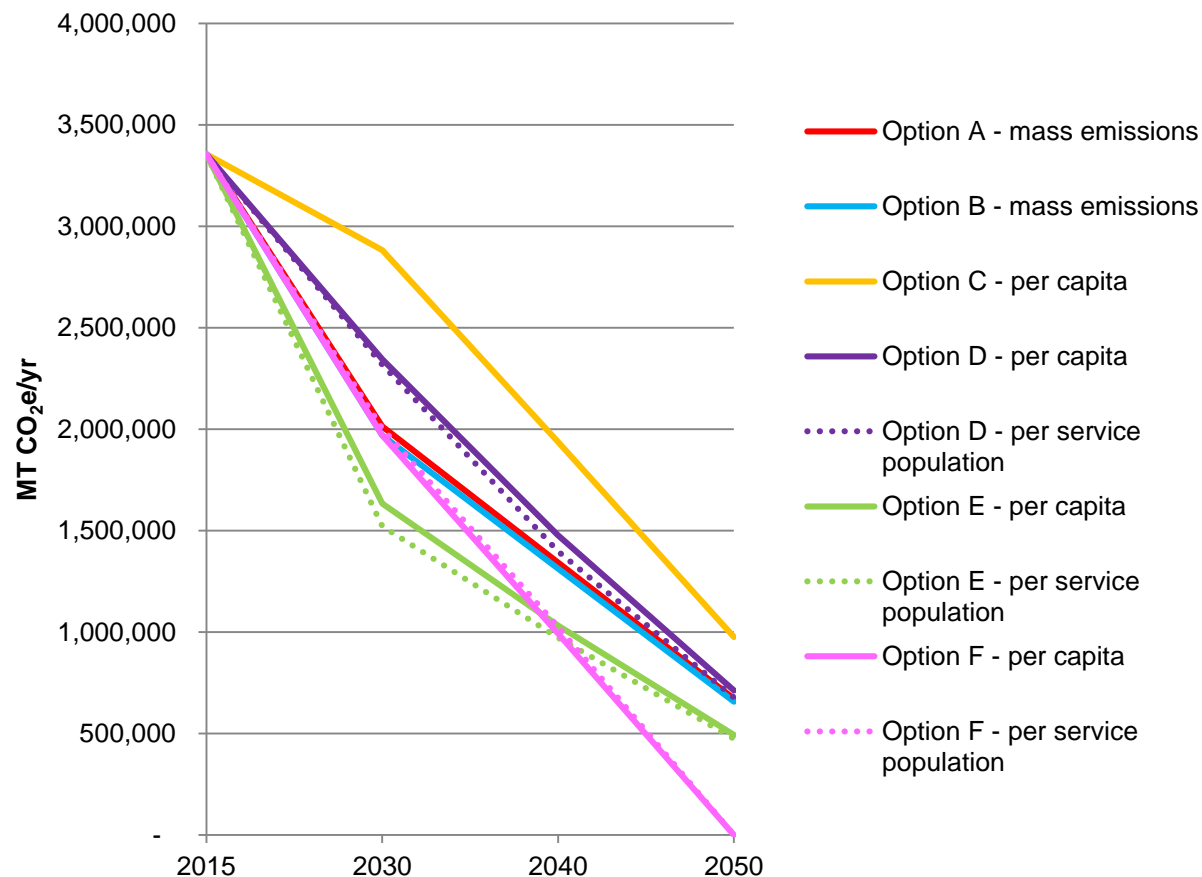
# Communitywide GHG Emissions by Sector

**Total Communitywide Emissions:**  
3.3 Million Metric Tons of Carbon Dioxide Equivalent





# GHG Emissions Reduction Target Considerations (Mass Emissions)



# Example: Possible Mitigation Actions for Transportation

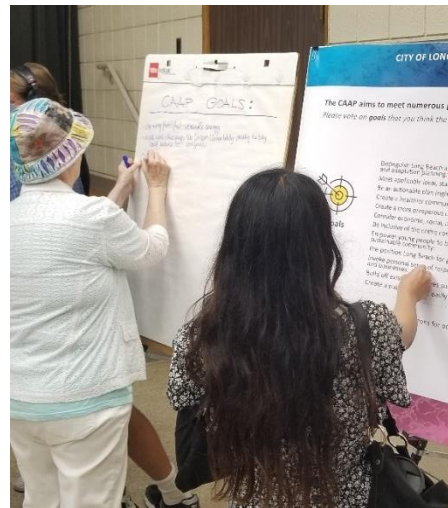
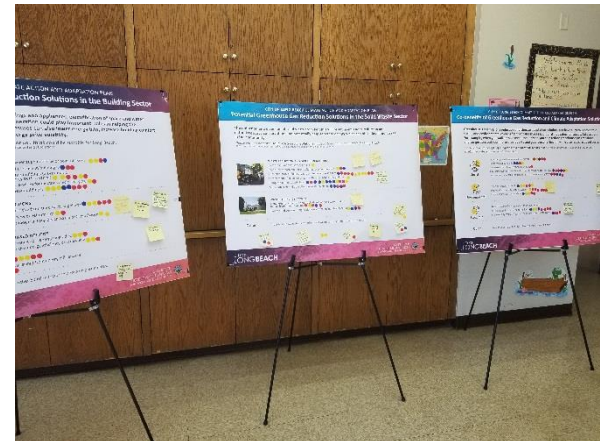
**Reminder:** Transportation is **54%** of emissions in the City

FOCUS AREAS	ACTIONS
Transit Service Enhancements	<ul style="list-style-type: none"><li>• Increase frequency and connectivity of transit options</li><li>• Increase express bus routes and dedicated bus lanes</li><li>• Improve transit stop/station environments</li><li>• Increase employment and residential development along transit corridors</li><li>• Explore the feasibility of providing free or reduced priced transit passes</li></ul>
Active Mobility	<ul style="list-style-type: none"><li>• Increase bicycle and scooter infrastructure</li><li>• Expand the City's bike share program</li><li>• Expand pedestrian infrastructure citywide</li></ul>
Electric Vehicle Deployment	<ul style="list-style-type: none"><li>• Develop an EV infrastructure master plan</li><li>• Implement EV car-share program in low-income communities</li><li>• Promote participation in SCAQMD Old Vehicle Scrapping program</li></ul>
Transportation Demand Management	<ul style="list-style-type: none"><li>• Update the City's transportation demand management (TDM) ordinance</li></ul>
Land Use and Transportation Planning	<ul style="list-style-type: none"><li>• Increase density and mixing of land uses</li></ul>



# CAAP Development Process: Looking Ahead

- Reviewing and getting feedback on draft adaptation and mitigation actions in detail with every Working Group and the general public
- 1/26 Citywide Open House
- 30 day public comment period on draft actions
- Draft plan anticipated March 2019





# Learn More, Get Involved, Share Ideas!

## YOU'RE INVITED!

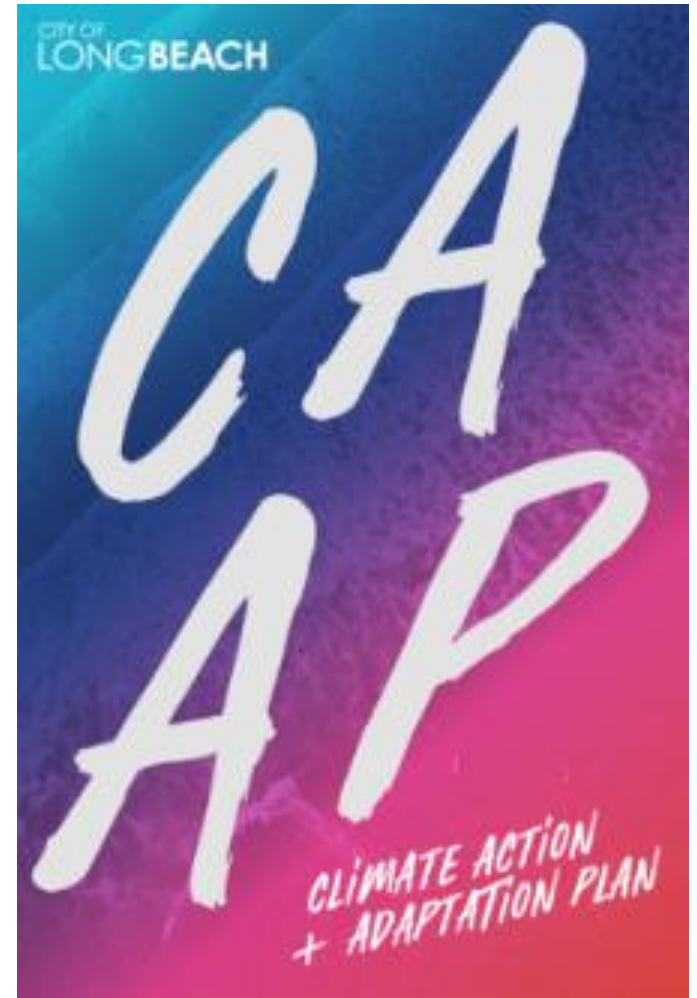
**The 2nd CAAP Public Open House**

**Saturday, January 26, 2019**

**10am – 1pm**

***Michelle Obama Library***

Provide your feedback on potential mitigations  
and adaptations, sustainability resource fair,  
family friendly activities, refreshments



# Learn More, Get Involved, Share Ideas!



- ▶ Visit our website for more info on the project, to take the CAAP survey and to find out about upcoming events:  
<http://www.lbds.info/climateactionlb/default.asp>
- ▶ #ClimateActionLB
- ▶ Sign-up for alerts on any of these projects via LinkLB (see website)
- ▶ Ideas? Suggestions?  
Contact:  
Alison Spindler, Planner:  
[alison.spindler@longbeach.gov](mailto:alison.spindler@longbeach.gov)  
562-570-6946

SMALL  
CHANGE

BIG  
IMPACT